

In the Claims

- 1(Cancelled).
- 2(Cancelled).
- 3(Cancelled).
- 4(Cancelled).
- 5(Cancelled).
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- 16(Cancelled).
- 17(Cancelled).
- 18(Cancelled).
- 19(Cancelled).
- 20(Cancelled).

21(New). A multiple channel system for a twisted pair telephone wire local loop system, comprising:

a subscriber gateway system having an n-channel transceiver connected to the twisted pair telephone wire, the n-channel transceiver sending and receiving multiple independent channels, wherein the n-channel transceiver has a plurality of digital demodulators;

an n-channel transceiver at a central office connected to the twisted pair telephone wire, the n-channel transceiver sending and receiving multiple independent channels wherein n is greater than two; and

a local circuit switch connected to an output of the n-channel transceiver at the central office.

22(New). The system of claim 21, further including a digital subscriber line access multiplexer connected to the output of the n-channel receiver at the central office.

23(New). The system of claim 21, wherein the plurality of digital modulators are coupled to a plurality of digital filters.

24(New). The system of claim 23, wherein each of the outputs of the plurality of digital filters is summed by a summer.

25(New). The system of claim 23, wherein the plurality of digital modulators are implemented in a digital signal processor.

26(New). The system of claim 21, wherein the plurality of digital modulators are implemented in a digital signal processor.

27(New). A method of operating a bandwidth allocation system for a twisted pair telephone wire local loop system, comprising the steps of:

- (a) receiving a bandwidth allocation request at an office controller;
- (b) selecting an unused section of frequency;
- (c) determining if the unused section of frequency has sufficient bandwidth;
- (d) when the unused section of frequency has sufficient bandwidth, performing a link quality analysis; and
- (e) when the link quality analysis is greater than a predetermined minimum, defining the unused section of frequency as available.

28(New) The method of claim 27, further including the steps of:

- (f) when the frequency band is available, determining a filter scheme and a frequency translation scheme;
- (g) transmitting the filter scheme and the frequency translation scheme to a subscriber controller over a control channel;
- (h) sending a bandwidth allocation available message by the office controller.

29(New). A bandwidth allocation system for a twisted pair telephone wire local loop system, comprising:

- a subscriber digital filter system connected to the twisted pair telephone wire;
- an office digital filter system connected to the twisted pair telephone wire; and
- an office controller sending a control signal to the office digital filter system, wherein the office controller receives a bandwidth allocation request and calculates a digital filter coefficients necessary to realize a digital filter to satisfy the bandwidth allocation request.

30(New) The system of claim 29, further including:

a subscriber controller sending a control signal to the subscriber digital filter system.

31(New). The system of claim 30, wherein the office controller transmits the digital filter coefficients to the subscriber controller over a control channel.

32(New). The system of claim 29, further including a subscriber transceiver coupled to the subscriber controller and the subscriber filter system.